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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/592,734	06/13/2000	Fumio Koyama	192909US2	7329

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EXAMINER

YANG, RYAN R

ART UNIT	PAPER NUMBER
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2672

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/592,734

Applicant(s)

KOYAMA, FUMIO

Examiner

Ryan R Yang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 5/16/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 5/16/2003 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/592,734 is acceptable and a CPA has been established. An action on the CPA follows.
2. This action is responsive to communications: Amendment, filed on 5/16/2003. This action is non-final.
3. Claims 1-12 are pending in this application. Claims 1 and 7 are independent claims. In the Amendment, filed on 5/16/2003, claims 1 and 7 were amended.
4. The present title of the invention is "Color correction in image display" as filed originally.

Claim Rejections - 35 USC § 112

5. Claims 1 and 7 recites the limitation "without making a luminance of the light existing from the pixels of the image display device conform to a predetermined profile throughout the image display device" in line 12-14. There is insufficient antecedent basis for this limitation in the claim.

Specification states the constant table 220 of gain corrector 120 (Figure 2) stores red and blue correction gains $gr(x,y)$ and $gb(x,y)$ for each pixel (page 7, line 724). It shows the table is location dependent, and therefore conforms to a predetermined profile.

6. Claims 2-6 and 8-12 are rejected because they are depended on rejected claims.

Claim Rejections - 35 USC § 102

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Muraji et al. (5,260,797).

As per claim 1, Muraji et al., hereinafter Muraji, discloses an image display apparatus comprising:

an image processor for outputting image data including plural color component data (Figure 1 8);

a gain corrector for correcting chromaticity levels of the image data output by the image processor (Figure 1 9); and

an image display device having pixels each emitting a plurality of colored light rays for forming a color image in accordance with the corrected image data corrected by the gain corrector (Figure 1 5), wherein

wherein the gain corrector corrects the level of at least one of the plural color component data applied to the pixels in accordance with respective positions of the pixels such that, when image data representing an image of a uniform color are output from the image processor, a difference in chromaticity of light exiting from the pixels due to characteristics difference between the pixels of the image display device is reduced without making luminance of the light exiting from the pixels of the image display device

conform to a predetermined luminance profile throughout the image display device ("a signal correction circuit for correcting said red and blue color component signals independently of one another so that a luminance distribution on said screen by each of said three projection lenses becomes a predetermined nonuniform luminance distribution according to the predetermined correction data, thereby correcting the nonuniformity of the luminance caused by the optical device", column 2, line 38-46).

9. As per claim 2, Muraji demonstrated all the elements as applied in the rejection of independent claim 1, supra, and further discloses the gain corrector corrects the chromaticity levels of all but a specific one of the plural color component data applied to the pixels to reduce difference in level between the specific color component data and the other color component data ("The red and blue color component signals of an input video signal are corrected independently of one another so that their luminance is commensurate with that of the green color component signal", column 2, line 52-55).

10. As per claim 3, Muraji demonstrated all the elements as applied in the rejection of claim 2, supra, and further discloses the specific color component data is the type of color component data that makes the greatest contribution to the luminance of the light for forming the image ("the green color component signal", column 2, line 55).

11. As per claim 4, Muraji demonstrated all the elements as applied in the rejection of claim 3, supra, and further discloses the plural color component data are red, green and blue component data and the specific color component data is the green component data ("The red and blue color component signals of an input video signal are

corrected independently of one another so that their luminance is commensurate with that of the green color component signal", column 2, line 52-55).

12. As per claim 7, Muraji discloses an image display method comprising:

providing image data including plural color component data ("a driving circuit for generating three driving signals in accordance with red, green and blue color component signals of an input video signal, and for respectively feeding said three driving signals into said three image display devices", column 2, line 32-36);

correcting chromaticity levels of the image data; and

producing light representing an image at a plurality of pixels of an image display device, each pixel emitting a plurality of colored light rays for forming a color image in accordance with the corrected image data ("by projecting the light modulated by the video display device on the screen to generate an image, an image uniform in brightness and color even in peripheral parts can be displayed on the projection screen", column 2, line 46-51), wherein

the correcting step comprises correcting the level of at least one of the plural color component data applied to the pixels in accordance with respective positions of the pixels such that, when image data representing an image of a uniform color are output from the image processor, a difference in a chromaticity of light exiting from the pixels due to characteristic differences between the pixels of the image display device is reduced without making luminance of the light exiting from the pixels of the image display device conform to a predetermined luminance profile throughout the image display device ("a signal correction circuit for correcting said red and blue color

component signals independently of one another so that a luminance distribution on said screen by each of said three projection lenses becomes a predetermined nonuniform luminance distribution according to the predetermined correction data, thereby correcting the nonuniformity of the luminance caused by the optical device", column 2, line 38-46).

13. As per claim 8, Muraji demonstrated all the elements as applied in the rejection of independent claim 7, supra, and further discloses the step of correcting the level of at least one of the plural color component data includes the step of correcting the levels of all but a specific one of the plural color component data applied to the pixels to reduce difference in level between the specific color component data and the other color component data ("The red and blue color component signals of an input video signal are corrected independently of one another so that their luminance is commensurate with that of the green color component signal", column 2, line 52-55).

14. As per claim 9, Muraji demonstrated all the elements as applied in the rejection of dependent claim 8, supra, and further discloses the specific color component data is the type of color component data that makes the greatest contribution to the luminance of the light for forming the image ("the green color component signal", column 2, line 55).

15. As per claim 10, Muraji demonstrated all the elements as applied in the rejection of dependent claim 9, supra, and further discloses the plural color component data are red, green and blue component data and the specific color component data is the green component data ("The red and blue color component signals of an input video signal are

corrected independently of one another so that their luminance is commensurate with that of the green color component signal", column 2, line 52-55).

Claim Rejections - 35 USC § 103

16. Claims 5, 6, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraji (US 5,260,797) in view of Hideo (JP 11-113019).

As per claim 5, Muraji demonstrated all the elements as applied in the rejection of independent claim 1.

Muraji discloses an apparatus for correcting nonuniformity of an image display, it is noted that Muraji does not explicitly disclose the display is segmented and correction values are interpolated from the apex values, however, this is known in the art as taught by Hideo. Hideo discloses an image display correction method in which the plurality of pixels are segmented into a plurality of small areas of polygonal shape (see Figure 4); correction values for apex pixels corresponding to apexes of the small blocks are

determined in advance, and correction values of pixels other than the apex pixels in each small areas are interpolated from the correction values of the apex pixels of the small area (Figure 10, where the coordinates of the four corner position $G(X_n, Y_n)$ and correction values are entered).

Thus, it would have been obvious to one of ordinary skill in the art to incorporate the teaching of Hideo into Muraji because Muraji discloses an image display apparatus and Hideo discloses an image correction method by segmenting the display area in order to form a smoother corrected image.

17. As per claim 6, Muraji and Hideo demonstrated all the elements as applied in the rejection of dependent claim 5, supra, and Hideo further the plurality of pixels are segmented into the plurality of small areas by a horizontal axis passing through a center pixel among the multiple pixels, a vertical axis passing through the center pixel, and defining the sides of a rhombus whose apexes are the extremities of the horizontal axis and the vertical axis (Figure 4, where a square is a special case of a rhombus).

18. As per claim 11, Muraji demonstrated all the elements as applied in the rejection of independent claim 7.

Muraji discloses an apparatus for correcting nonuniformity of an image display, it is noted that Muraji does not explicitly disclose the display is segmented and correction values are interpolated from the apex values, however, this is known in the art as taught by Hideo. Hideo discloses an image display correction method in which the plurality of pixels are segmented into a plurality of small areas of polygonal shape (see Figure 4); correction values for apex pixels corresponding to apexes of the small blocks are determined in advance, and correction values of pixels other than the apex pixels in each small areas are interpolated from the correction values of the apex pixels of the small area (Figure 10, where the coordinates of the four corner position $G(X_n, Y_n)$ and correction values are entered).

Thus, it would have been obvious to one of ordinary skill in the art to incorporate the teaching of Hideo into Muraji because Muraji discloses an image display apparatus and Hideo discloses an image correction method by segmenting the display area in order to form a smoother corrected image.

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19. As per claim 12, Muraji and Hideo demonstrated all the elements as applied in the rejection of dependent claim 11, supra, and Hideo further the plurality of pixels are segmented into the plurality of small areas by a horizontal axis passing through a center pixel among the multiple pixels, a vertical axis passing through the center pixel, and defining the sides of a rhombus whose apexes are the extremities of the horizontal axis and the vertical axis (Figure 4, where a square is a special case of a rhombus).

Thus, it would have been obvious to one of ordinary skill in the art to incorporate the teaching of Hideo into Muraji because Muraji discloses an image display apparatus and Hideo discloses an image correction method by running axis through a center pixel in order to form a smoother corrected image.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Ryan Yang** whose telephone number is **(703) 308-6133**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Michael Razavi**, can be reached at **(703) 305-4713**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231


or faxed to:

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(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 305-47000377.



Ryan Yang
July 29, 2003